

## Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

1. **(Currently amended)** A method of detecting the presence of *Treponema pallidum* or anti-treponemal antibodies in a biological sample, comprising:  
contacting an isolated *Treponema pallidum* acidic repeat protein or one or more isolated, immunogenic *Treponema pallidum* peptide(s) of the acidic repeat protein with an antibody-containing biological sample, wherein the ~~acid~~ acidic repeat protein or the isolated immunogenic *Treponema pallidum* peptide(s) of the ~~acid~~ acidic repeat protein comprises the amino acid sequence EVEDX<sub>1</sub>PX<sub>2</sub>VVEPASX<sub>3</sub>X<sub>4</sub>EGGER, wherein X<sub>1</sub> is A or V; X<sub>2</sub> is K or G; X<sub>3</sub> is E or G; and X<sub>4</sub> is R or H; and  
detecting formation of a complex between the immunogenic protein or peptide and the antibody, wherein the presence of the complex indicates the presence of *Treponema pallidum* or anti-treponemal antibodies in the biological sample.
2. **(Currently amended)** The method of claim 1, wherein the isolated, immunogenic *Treponema pallidum* peptide comprises ~~an immunogenic~~ a repeat region of the acidic repeat protein.
3. **(Cancelled)**.
4. **(Withdrawn)** The method of claim 1, wherein the immunogenic peptide is encoded by a nucleotide sequence as shown in SEQ ID NOs: 1, 3, 5, 19, 21, 23, and 25.
5. **(Original)** The method of claim 1, wherein the immunogenic peptide comprises an amino acid sequence having the sequence shown in SEQ ID NO: 15.
6. **(Original)** The method of claim 1, wherein the *Treponema pallidum* is *T. pallidum* subspecies *pallidum*, *T. pallidum* subspecies *pertenue* (CDC-2 strain), *T. pallidum* subspecies *pertenue* (CDC-1 strain), or *T. pallidum* subspecies *endemicum*.

7. **(Previously presented)** The method of claim 1, wherein detecting the presence of the complex indicates the presence of the disease syphilis, yaws, or bejel.
8. **(Withdrawn)** The method of claim 1, wherein the immunogenic peptide comprises the amino acid sequence shown in SEQ ID NO: 2, or a conservative variation thereof, and wherein the presence of the complex indicates the presence of syphilis.
9. **(Withdrawn)** The method of claim 1, wherein the immunogenic peptide comprises the amino acid sequence shown in SEQ ID NO: 4, or a conservative variation thereof, and wherein the presence of the complex indicates the presence of yaws.
10. **(Withdrawn)** The method of claim 1, wherein the immunogenic peptide comprises the amino acid sequence shown in SEQ ID NO: 6, or a conservative variation thereof, and wherein the presence of the complex indicates the presence of bejel.
11. **(Currently amended)** The method of claim 1, wherein the acidic repeat protein or immunogenic peptide is bound to a solid phase.
12. **(Currently amended)** The method of claim 1, wherein the acidic repeat protein or immunogenic peptide is labeled.
13. **(Previously presented)** The method of claim 12, wherein the label comprises an electrochemiluminescent label, a chemiluminescent label, an enzymatic label, a bioluminescent label, or a fluorescent label.
14. **(Original)** The method of claim 1, further comprising incubating the peptide-antibody complex with a second antibody specific for the peptide, wherein the second antibody is labeled with a detectable label and binds to the peptide-antibody complex.

15. **(Original)** The method of claim 1, wherein the biological sample comprises wounds, blood, tissues, saliva, semen, vaginal secretions, tears, urine, bone, muscle, cartilage, CSF, skin, or any human tissue or bodily fluid.

16. **(Currently amended)** A method of detecting the presence of *Treponema pallidum* in a biological sample, comprising:

contacting an isolated antibody to specific for an immunogenic *T. pallidum* peptide of an *T. pallidum* acidic repeat protein with a biological sample, wherein the ~~acid~~ acidic repeat protein comprises the amino acid sequence EVEDX<sub>1</sub>PX<sub>2</sub>VVEPASX<sub>3</sub>X<sub>4</sub>EGGER, wherein X<sub>1</sub> is A or V; X<sub>2</sub> is K or G; X<sub>3</sub> is E or G; and X<sub>4</sub> is R or H; and

detecting formation of a complex between ~~an~~ the acidic repeat protein or a peptide of the acidic repeat protein, if such is in the biological sample, and the antibody, wherein the presence of the complex indicates the presence of *Treponema pallidum*.

17. through 26. **(Cancelled)**

27. **(Withdrawn)** The method of claim 1, wherein the immunogenic peptide comprises an amino acid sequence as shown in SEQ ID NO: 20.

28. **(Currently amended)** A kit for detecting *T. pallidum* in a biological sample using the method of claim 1, comprising an isolated acidic repeat protein or one or more isolated, immunogenic *Treponema pallidum* peptide of the acidic repeat protein, and instructions for carrying out the method of claim 1.

29. **(Cancelled)**

30. **(Currently amended)** The method of claim 2, wherein the ~~immunogenic~~ repeat region of the acidic repeat protein comprises an amino acid sequence selected from any sequence comprising:

EVEDX<sub>1</sub>PX<sub>2</sub>VVEPASX<sub>3</sub>X<sub>4</sub>EGGEREVEDX<sub>1</sub>PX<sub>2</sub>VVEPASX<sub>3</sub>X<sub>4</sub>EGGER

(wherein X<sub>1</sub> is A or V; X<sub>2</sub> is K or G; X<sub>3</sub> is E or G; and X<sub>4</sub> is R or H), which has an immunogenicity specific to *Treponema pallidum*.

31. **(Currently amended)** The method of claim 16, wherein the immunogenic peptide comprises ~~the immunogenic~~ a repeat region of the acidic repeat protein.

32. through 36. **(Cancelled)**